

Chemical-Associated Vitiligo



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An otherwise healthy man in his 40s presented with white macules and patches that appeared on his skin several years ago. Initially, he noticed asymptomatic white discoloration on the ventral aspect of wrists, with subsequent involvement of the head and neck. He had no relevant medical, drug, or family history, except for thyroid dysfunction in his mother. He worked in a laundry facility, with frequent exposure to detergents. Examination revealed well-demarcated hypopigmented patches without erythema or scaling on the ventral forearms (Figure 1). One patch on the occipital area scalp showed white discoloration of the associated hair (Figure 2). Wood's lamp examination



FIGURE 2. Well-defined coalescing hypopigmented patches on ventral forearm.

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FIGURE 1. Well-defined hypopigmented patches on vertex scalp, with discoloration of the associated hair, and posterior neck.

showed no accentuation. Based on the patient's history of exposure by frequently implicated chemicals, as well as the morphology and distribution of skin lesions, a diagnosis of chemical-associated vitiligo was made.

Chemical-associated vitiligo, an acquired disorder that presents with hypo- or depigmented patches, is thought to be induced by repeated exposure to specific chemicals.¹ Several chemical compounds have been implicated, most of which contain phenol groups in their chemical structure. Because the phenol group constitutes a part of the amino acid tyrosine, the precursor of melanin, it has been hypothesized that phenol-containing compounds act as tyrosine analogs when applied

to the skin, thereby interfering with melanogenesis.¹ Others have hypothesized that depigmenting chemicals produce metabolites that are toxic to melanocytes or overwhelm the melanocyte ability to withstand oxidative stress.² In cases of occupational exposure, as in our patient, the hands and forearms are frequently involved. However, some reports demonstrated that lesions could appear in remote areas: that is, those not in direct contact with chemical substances.³ This observation has led to invocation of the autoimmune theory, proposing that chemical-induced stress in melanocytes initiates an autoimmune response, leading to their destruction. Subsequently, this immune response can affect other melanocytes in distant regions that are not directly in contact with the chemical.¹ By contrast, idiopathic vitiligo commonly affects the periorificial areas, nipples, and genitals. Chemical-associated vitiligo represents a diagnostic challenge, as it is often difficult to differentiate it from idiopathic vitiligo based on the clinical as well as the histopathological presentation.¹

The presence of 3 out of the following 4 criteria are considered sufficient for establishing the diagnosis of chemical-associated vitiligo: acquired vitiligo-like depigmented lesion(s), history of repeated exposure to specific chemical compounds, patterned vitiligo-like macules at site of exposure, and

confetti macules.⁴ Thorough history taking is essential to diagnose chemical-associated vitiligo and identify the possible culprit. Presumably, chemical-associated vitiligo does not confer the same increase in associated autoimmune conditions as does idiopathic vitiligo, although this is not well studied.⁵ In many cases, strict avoidance of the offending chemical agent allows the condition to self-resolve. Moreover, chemical-associated vitiligo tends to respond better to skin-directed treatments than idiopathic vitiligo.¹

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